

REMARKS

Originally filed claims 1, 5-6, and 10-15 as amended by this paper are the only active claims pending in this application. Claims 2-4 and 7-9 are canceled. The foregoing separate sheets marked as "Listing of Claims" shows all the claims in the application, each with an indication at its first line showing the claim's current status. The Office Action rejects the examined claims 1-9 and 13 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,179,608 ("Kraemer") in view of U.S. Patent No. 4,909,730 ("Roussakis"). Office Action at pages 2-4.

Applicant respectfully traverses the rejection. Applicant's disclosed invention is a disk-type flame arrestor having structure with two different general diameters of gas flow passages, called "gaps" in the specification – larger diameter passages for an acceptable gas velocity and total flow volume, and smaller diameter passages for a higher velocity gas flow, which provides a cooling of the flame arrestor that is not provided by the closest prior art. Applicant respectfully refers to the Specification, at page 7, lines 21-35, for an example description of the fundamental structural principles of the invention. Applicant's claim 1 recites:

structure forming multiple concentric rings of first gas passages, about a longitudinal axis in a flow direction, extending from the front face to the back face, said first gas passages *each having a cross-sectional area, normal to the flow direction, larger than a given value*; and

structure forming at least one ring of second gas passages, said ring being substantially concentric with said multiple concentric rings of first gas passages, said second gas passages extending in the flow direction and each having a cross-sectional area, normal to the flow direction, less than the given value,

wherein said multiple concentric rings of first gas passages and said at least one ring of second gas passages are *arranged in an alternating pattern, such that said at least one ring of said second gas passages surrounds at said at least one ring of said first gas passages* (emphasis added)

Claim 1, currently amended, at lines 1-14.

The combined disclosures of Kraemer and Roussakis do not disclose, teach or suggest the claim 1 element of “*structure forming at least one ring of second gas passages ... substantially concentric with said multiple concentric rings of first gas passages ... [each] having a cross-sectional area ... less than the*” cross-sectional area of the first passages. Claim 1, currently amended, at lines 7-10.

The combined disclosures of Kraemer and Roussakis do not disclose, teach or suggest the claim 1 element of “at least one ring of second gas passages ... *arranged in an alternating pattern, such that said ... ring of said second gas passages surrounds at said at least one ring of said first gas passages*. Claim 1, currently amended, at lines 11-14.

Kraemer discloses a two-stage flashback arrestor, having a first “monolith” 10 followed by a second “monolith” 20. Kraemer’s purported invention is that the passages of the first “monolith” 10 extend in a conventional direction, while the passages of the second “monolith” 20 are canted, or angled and are rotationally offset with respect to the monolith 10 passages. According to Kraemer, the cant and offset of the second monolith passages as providing a swirl to the gas flow.

Comparing Kraemer to Applicant’s invention, the only similarity is that both have a plurality of passages. Kraemer is basically cumulative to the conventional flame arrestor shown in Applicant’s Fig. 1. It is cumulative because, like Fig. 1, Kraemer discloses all of the passages of the first monolith being the same, i.e., uniform with respect to one another, and all of the passages of the second monolith being the same. Kraemer’s purported invention is that the passages of the second monolith 20 are canted and offset with respect to the passages of Kraemer’s first monolith 10. According to Kraemer, the offset and canting provides a swirled gas flow and, according to Kraemer, this provides a better flame quenching. The mechanism of Kraemer’s invention is to use two stages of passages, the second being canted and offset with respect to the first, to effect a purported swirl. Kraemer discloses nothing of forming or arranging, in any given monolith, different size passages – for any purpose or function. Applicant respectfully submits that there is

nothing in Kraemer, or in any other reference of record, that suggests Kraemer's swirl being improved by such an arrangement.

Applicant therefore submits that, with respect to Applicant's claim 1, Kraemer adds nothing to the conventional art to which Applicant's invention is directed.

The Office Action states that Kraemer, at column 3, lines 45-46, discloses a structure meeting the original claim 1 language of "second gaps with a smaller gap cross section" than the selected cross section of the "first gaps." Office Action at page 2. Applicant respectfully submits that the Office Action misinterprets Kraemer. The cited passage is: "the cross sectional area of a channel can be constant or can be changing." (emphasis added). Applicant respectfully submits that the Office Action may have overlooked the article "a" that precedes the word "channel" in the cited passage of Kraemer. Applicant respectfully submits that the plain meaning of the cited passage, based on the article "a" in the phrase "a channel" and on reading the entirety of Kraemer is the following: the cross sectional area of a passage can be constant along the length of the passage, or can change along the length of the passage. This is the plain meaning of Kraemer's cited statement, and this the only interpretation of that statement that is consistent with Kraemer's disclosure. Stated differently, that is the only understanding of the cited statement that a person of ordinary skill in the art would form, either reading the statement alone or in view of the entirety of Kraemer's disclosure.

Applicant respectfully submits that Roussakis, the secondary reference, adds nothing to Kraemer relating to Applicant's claim 1, or to any other claim of the present application. Roussakis' item 3 is a flame arrestor using overlaid layers of woven sheets with diamond-shaped holes 32, providing an X-Y array of passages, all depicted as having the same cross sectional area. Roussakis states that layers of woven sheets are preferable over the conventional corrugated metal structure (which provides concentric rings of gas passages) shown as item 16.

The Office Action states that Roussakis' diamond-shaped are surrounded by structure meeting the "second gaps" limitation of the examined claims. The Office Action attached an Appendix with a kindly label of "320" showing the structure that

the Office Action construes as “second gaps.” See Office Action at page 3, last paragraph, and at Appendix.

Applicant respectfully acknowledges the Office Action’s consideration in attaching its labeling of Roussakis’ Fig. 12, to show its position as to what Roussakis discloses. Kraemer respectfully submits, though, that the Office Action misinterprets Roussakis’ layer woven sheets and/or does not properly limit the examined claim 1 terms “gap” or “second gaps” to their broadest reasonable meaning.

Applicant respectfully submits that the term “gap,” as used in Applicant’s specification and claims, means a gas passage, having a defined diameter. To expedite examination, however, Applicant has amended the claims to change “gaps” to “gas passages.”

Applicant respectfully submits that the structure, or structural region of Roussakis’ Fig. 12 that the Office Action labels as “320” does not disclose gas passages. First, Roussakis’ Fig. 12 shows only a *single* layer of the woven material. For the regions “320” to be actual gas passages the woven layers would have to be woven very specifically, and would have to be aligned in some manner that, even if possible, is not even suggested by Roussakis. Second, Roussakis does not even describe the regions labeled by the Office Action as “320” at all, much less as functioning, in any manner or form, as gas passages. Further, there is no support in Roussakis for any contention that the regions “320” are inherently gas passages, because Applicant cannot identify any basis for arguing that the “320” regions *must, with certainty*, function as gas passages for Roussakis’ apparatus to operate as it is described.

Further, even if the regions “320” are argued as being “gas passages,” which they are not, the fact remains that Roussakis does not teach, disclose or suggest anything of, or toward the claim 1 limitations of “at least one ring of second gas passages, substantially concentric with said multiple concentric rings of first gas passages of first passages ... arranged in an alternating pattern, such that said at least one ring of said second gas passages surrounds at said at least one ring of said first gas passages.” Applicant submits that whatever means for ingress and egress for gasses through Roussakis’ Figs. 10-12 may be speculated, that the “320”

region in the Fig. 10-12 woven structure is beyond, far beyond, the broadest reasonable meaning of: "at least one ring of second gas passages, substantially concentric with said multiple concentric rings of first gas passages of first passages."

Applicant respectfully submits that for at least the reasons presented above, the amended claim 1 is patentable over the combination of Kraemer and Roussakis. Applicant therefore respectfully requests that the rejection be reconsidered and withdrawn.

The Office Action rejects the examined claims 10-12, 14 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Kraemer in view Roussakis, and further in view of U.S. Patent No. 6,342,082 ("Leinemann '082"). The Office Action states that Leinemann '082 teaches "two sizes of passage gaps ... wherein the ratio of the number of the second gaps ... [to] first gaps" decreases from the inside outwards. Office Action, at pages 4-5.

Applicant is knowledgeable of what is disclosed by Leinemann '082. Applicant respectfully submits that Fig. 5 of Leinemann '082 shows a corrugated metal arrestor having smaller gas passages 9' at its center portion than at its outer portion. This is not relevant to the present invention. Applicant's subject claim 1 recites that:

said multiple concentric rings of first gas passages and said at least one ring of second gas passages are arranged in an alternating pattern, such that said at least one ring of said second gas passages surrounds at said at least one ring of said first gas passages

Claim 1, currently amended, at lines 11-14.

Example structure within this claim language is shown at Figs. 3 and 7 of Applicant's disclosure, with items 12 and 13 being concentric rings of first gas and second gas passages. Leinemann '082 discloses nothing within, suggestive of or toward this claim language. Stated differently, Lienemann '082 does not teach, disclose or suggest anything that would motivate a person of ordinary skill in the art toward the claim 1 structure of concentric rings of first gas passages and second gas passages. Leinemann '082 teaches the smaller gas passages 9' being uniformly arranged at the center region of the detonation arrestor, to provide a higher

resistance to a detonation front. That disclosed structure 9' and its disclosed function and principle of operation have nothing that would motivate a person of ordinary skill in the art toward the present claim 1, or toward any of the added limitations recited by its dependent claims 10-12, 14 and 15.

Conclusion

In view of the foregoing, Applicant respectfully requests that the application be reconsidered, that claims 1, 5-6, and 10-15 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



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